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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,815	11/13/2001	Pingfan P. Wu	980.1078US01	3069

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ALTERA LAW GROUP, LLC  
6500 CITY WEST PARKWAY  
SUITE 100  
MINNEAPOLIS, MN 55344-7704

EXAMINER

BARBER, THERESE

ART UNIT PAPER NUMBER

2882

DATE MAILED: 05/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/010,815

Applicant(s)

WU ET AL.

Examiner

Therese Barber

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 12 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-60 is/are pending in the application.
- 4a) Of the above claim(s) 9,12-24,34,42-47 and 52-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-8,10,11,25-33,35-41,48-51 and 56-60 is/are rejected.
- 7) ☐ Claim(s) 1,11 and 31 is/are objected to.
- 8) ☐ Claim(s) 1-60 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Restriction/Election Requirement*

1. Applicant's election with traverse of claims 33 and 60 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that the claims 33 and 60 are generic. This is not found persuasive because the examiner disagrees with the assessment that claims 33 and 60 are generic. The Manual of Patent Examining Procedure (MPEP § 806.04(d) states "it is not possible to define a generic claim with that precision existing in the case of a geometrical term. In general, a generic claim should include no material element additional to those recited in the species claims, and must comprehend within its confines the organization covered in each of the species. For the purpose of obtaining claims to more than one species in the same case, the generic claim cannot include limitations not present in each of the added species claims. Otherwise stated, the claims to the species which can be included in a case in addition to a single species must contain all the limitations of the generic claim." Based on these statements from the MPEP regarding a generic claim, all of the limitations for claims 33 and 60 should be present in every illustrated drawing of an instant application; however, all of the limitations are not present in Figure 7. Thus, the examiner concludes that claims 33 and 60 cannot be considered generic claims based on Figure 7.

The requirement is still deemed proper and is therefore made FINAL.

2. In addition, the examiner agrees that the inventions are related as combination/subcombination instead of intermediate-final product relationship. However, the examiner maintains that the restriction and election of species requirements for the instant

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application because the different embodiments of the inventions have divergent subject matter, different classification and the search required for one group is not required for the second group.

3. The applicants have selected Species 2, drawn to figure 6, with traverse. The following claims are readable on Species 2: 1-8, 10, 11, 25-33, 35-41, 48-51 and 56-60 according to the applicants.

### *Drawings*

4. Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

On page 7, lines 26-27, the applicants state that figure 3 illustrates a transmissive fiber optic polarization separator according to the prior art.

### *Specification*

5. The disclosure is objected to because of the following informalities:

Any reference to US Patent Application Serial #09/181,145 should be changed to US Patent Number 6,829,152.

Appropriate correction is required.

### *Claim Objections*

6. Claims 1, 11, and 31 are objected to because of the following informalities:

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Regarding claim 1, line 5, the term "bidirectional" should be changed to the term "bi-directional".

Regarding claim 1, line 9, the phrase "for bending" should be inserted before the term "one".

Regarding claim 11, the additional "." should be removed from the end of the sentence.

Regarding claim 31, line 1, the term "light" should be inserted after the term "wherein".

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-8, 10, 11, 25-33, 35-41, 48-51 and 56-60 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (USPN 6,282,025).

9. Regarding claims 1-8, 10, 11 and 48-51, Huang disclose an optical device comprised of a first waveguide (102); a second waveguide (120); and a birefringent optical system (110) with bi-directional, polarization-dependent free-space paths, with one of the bi-directional, polarization-dependent free-space path coupling at least the first waveguide to the second waveguide (fig. 6; col. 6, lines 43-55), the birefringent optical system including at least one prism (110) for bending one of the polarization-dependent paths in a clockwise direction and bending one of the polarization-dependent paths in a counterclockwise direction (col. 6, lines 43-

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55 and 64-67); wherein the birefringent optical system includes a first converging optical subsystem (108) for coupling at least the first waveguide to light propagating along the free-space paths and a second converging optical subsystem (118) for coupling the second waveguide to light propagating along at least one of the free-space paths (fig. 6); wherein at least one of the converging optical subsystems includes a lens (108,118); wherein light propagating in the second waveguide is polarized (col. 4, lines 15-18 and col. 6, lines 48-55); wherein the light propagates through the birefringent optical system from the first waveguide to the second waveguide (col. 6, lines 43-55; fig. 6); wherein the light propagates through the birefringent optical system from the second waveguide to the first waveguide (col. 6, lines 43-55; fig. 6); wherein the prism (110) is formed from a birefringent material; wherein the birefringent optical system includes a birefringent splitter, light propagating along the free-space paths interacting with the material (110; fig. 6); wherein the prism is integrated with the birefringent splitter (110; fig. 6); a third waveguide (122), the second converging optical subsystem (118) coupling the second waveguide to the polarization dependent path bent in a clockwise direction and third waveguide to the polarization dependent path bent in a counterclockwise direction (col. 6, lines 43-55 and col. 7, lines 1-3; fig. 6). Regarding the Wollaston prism (110), it is inherent that the Wollaston prism is formed from birefringent crystals. In addition, Huang discloses that a birefringent crystal is comprised of material such as  $\text{YVO}_4$ ,  $\text{LiNbO}_3$ , etc. (col. 4, line 45-46).

10. Regarding claims 25-32 and 56-59, Huang discloses an optical device comprised of a first waveguide (102); a second waveguide (120); a third waveguide (122); a Wollaston prism (110) disposed on the first and second bi-directional, polarization-dependent paths, the first and second

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bi-directional, polarization dependent paths overlapping between the first waveguide and the Wollaston prism (col. 6, lines 43-55; fig. 6); a first converging optical subsystem (108) disposed to couple light between the second waveguide and the Wollaston prism and between the third waveguide and the Wollaston prism (fig. 6), the first converging optical subsystem (108) including at least one focusing element (col. 6, lines 58-59) common to the first and the second bi-directional, polarization dependent paths (fig. 6; col. 43-55); wherein the first converging optical subsystem includes a lens (108); wherein the second converging optical subsystem couple light between the first waveguide and the Wollaston prism (fig. 6); wherein the first and second converging optical subsystems have a common focal distance and the first waveguide is separated by approximately the focal distance from the second optical subsystem, the first optical subsystem is separated approximately the focal distance from the Wollaston prism and the first optical subsystem is separated approximately the focal distance from at least the second waveguide (col. 6, lines 62-63; col. 7, lines 3-8 and col. 7, line 66 to col. 8, line 5); wherein light propagating in the second waveguide is polarized (col. 4, lines 15-18 and col. 6, lines 48-55); wherein light propagates along the first bi-directional, polarization dependent path from the first waveguide to the second waveguide (fig. 6; col. 6, lines 43-55); and wherein the Wollaston prism (110) is formed from a crystalline material selected from the group of yttrium ortho-vanadate ( $\text{YVO}_4$ ), lithium niobate ( $\text{LiNbO}_3$ ),  $\text{BaB}_2\text{O}_4$ ,  $\text{TeO}_2$  and rutile ( $\text{TiO}_2$ ). Regarding the Wollaston prism (110), it is inherent that the Wollaston prism is formed from birefringent crystals. In addition, Huang discloses that a birefringent crystal is comprised of material such as  $\text{YVO}_4$ ,  $\text{LiNbO}_3$ , etc. (col. 4, line 45-46).

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11. Regarding claims 33, 35-41 and 60, Huang discloses an optical device comprised of a first waveguide (102); a second waveguide (120); a third waveguide (122); a converging optical system (108, 118); a birefringent optical system (110) defining a first polarized optical path between the first waveguide and the second waveguide and defining a second polarized optical path between the first waveguide and the third waveguide (fig. 6; col. 6, lines 43-55), wherein the converging optical system includes at least one focusing element (col. 6, lines 58-59) disposed on both the first and second polarized optical paths where the first polarized optical path is spatially separated from the second polarized optical path (fig. 6); wherein the light propagating along the first polarized optical path propagates from the first waveguide (102) to the second waveguide (120; fig. 6); wherein the light propagating along the second polarized optical path propagates from the first waveguide (102) to the third waveguide (122; fig. 6); wherein the light propagating along the first optical path propagates from the second waveguide (120) to the first waveguide (102; fig. 6; col. 6, lines 43-55); wherein the light propagating along the second polarized optical path propagates from the third waveguide (122) to the first waveguide (102; fig. 6; col. 6, lines 43-55); wherein the birefringent optical system includes a Wollaston prism (110) that bends the first polarized optical path and the second polarized optical path in different directions (col. 6, lines 64-67); wherein the birefringent optical system (110) includes a birefringent material that separates the first and second polarized optical paths (fig. 6); and wherein the birefringent optical system includes a prism (110) that bends the first polarized path in a clockwise direction and the second polarized optical path in a counterclockwise direction (col. 6, lines 43-55 and col. 7, lines 1-3; fig. 6). Regarding the Wollaston prism (110), it is inherent that the Wollaston prism is formed from birefringent crystals. In addition, Huang



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discloses that a birefringent crystal is comprised of material such as  $\text{YVO}_4$ ,  $\text{LiNbO}_3$ , etc. (col. 4, line 45-46).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Therese Barber whose telephone number is (703) 306-0205. The examiner can normally be reached on Monday to Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4857 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4900.

tb   
May 19, 2003

